

ABSTRACT OF THE DISCLOSURE

For manufacture of a semiconductor device using a low heat resistant substrate such as a glass substrate, a method of heat treatment for activating an impurity element that is used to dope a semiconductor film and for performing gettering on the 5 semiconductor film in a short period of time without deforming the substrate, is provided. Also provided is a heat treatment apparatus for carrying out the above heat treatment. The heat treatment method of the present invention involves irradiating an object with light emitted from a lamp light source, and is characterized in that the lamp light source emits light for 0.1 to 20 seconds at a time and that light from the lamp light source 10 irradiates the object several times. The method is also characterized in that the irradiated region is subjected to pulsating light from the lamp light source such that the irradiated region holds the temperature to its highest for 0.5 to 5 seconds. The method is also characterized in that the amount of coolant to be supplied is increased or reduced in accordance with blinking of the lamp light source to enhance the effect of the heat 15 treatment on the semiconductor film and to prevent a heat-induced damage to the substrate.